

## D066 - Excitatory effects on respiratory activity mediated by 5-HT<sub>1A</sub> and 5-HT<sub>3</sub> receptors within the preBötzing Complex of the adult rabbit

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D066 - Excitatory effects on respiratory activity mediated by 5-HT<sub>1A</sub> and 5-HT<sub>3</sub> receptors within the preBötzing Complex of the adult rabbit

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**AIMS:** We investigated the role played by serotonin (5-HT) receptors within the preBötzing complex (preBötC), the Bötzing complex and the rostral inspiratory ventral respiratory group in the modulation of respiratory activity. **METHODS:** Experiments were performed on  $\alpha$ -chloralose-urethane anesthetized, vagotomized, paralyzed and artificially ventilated rabbits making use of neuronal recordings and bilateral microinjections (30-50 nl). The presence of GABAergic neurons and 5-HT<sub>1A</sub> receptors in the preBötC region was investigated by immunohistochemistry. **RESULTS:** 5-HT caused excitatory effects on respiratory activity only when applied to the preBötC region. These effects were mediated only by 5-HT<sub>1A</sub> and 5-HT<sub>3</sub> receptors as shown by microinjections of specific agonists of the different types of serotonin receptors, including 8-OH-DPAT or BP 554 and phenylbiguanide. Unexpectedly, the blockade of 5-HT<sub>1A</sub> receptors by methysergide or the specific antagonist (S)-WAY 100135 induced excitatory respiratory effects. Microinjections of the 5-HT<sub>3</sub> receptor antagonist ondansetron did not influence respiration, but prevented (S)-WAY 100135-induced responses. The blockade of GABA<sub>A</sub> receptors by bicuculline within the preBötC prevented the effects of the 5-HT<sub>1A</sub> receptor agonist 8-OH-DPAT. The involvement of GABAergic inhibition and 5-HT<sub>1A</sub> receptor-mediated disinhibition is also corroborated by immunohistochemical data. **CONCLUSIONS:** The results show for the first time in an adult animal preparation that 5-HT plays a pivotal role in the modulation of the preBötC activity through an action on 5-HT<sub>1A</sub> and 5-HT<sub>3</sub> receptors probably both at pre- and postsynaptic level and highlight the importance of disinhibition phenomena. Present findings could be relevant to some respiratory disorders.